PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	10/630,077
Filing Date	
First Named Inventor	Barker et al.
Art Unit	2881
Examiner Name	Nikita Wells
Attorney Docket Number	02W102

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number: Number - Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
NW	2	US-6,160,263	12/12/2000	Smith et al.	Background Reference
	3	US-5,118,950	06/02/1992	Bahns et al.	Background Reference
	4	US-5,206,506	04/27/1993	Kirchner	Background Reference
	5	US-5,977,554	11/2/1999	Smith et al.	Background Reference
	6	US-6,414,331	07/02/2002	Smith et al.	Background Reference
	17	US-4,867,939	09/19/1989	Deutch	Background Reference
	18	US-6,163,587	12/19/2000	Hessels	Background Reference
	21	US-4,939,742	07/03/1990	Bowman	Background Reference
	22	US-5,887,008	03/23/1999	Ikegami	Background Reference
	23	US-4,933,950	06/12/1990	Ikegami	Background Reference
NW	24	US-5,617,443	04/01/1997	Ikegami	Background Reference
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document: Country Code[3] - Number[4] - Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature	Nikita Wells	Date Considered	July 21, 04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/08B (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute for form 1449B/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	
				Filing Date	
				First Named Inventor	Barker et al.
				Group Art Unit	2881
				Examiner Name	Nikita Wells
Sheet	2	of	4	Attorney Docket Number	02W120

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
NW	1	Weinstein, J.D. and K.G. Libbrecht, "Microscopic Magnetic Traps for Neutral Atoms", Physical Review A, The American Physcial Society, Vol. 52, No. 5, November 1995, pp. 4004-4009.	
	7	Nieto, Michael Martin, et al., "Dense Antihydrogen: Its Production and Storage to Envision Antimatter Propulsion", Los Alamos Report LA-UR-01-3760, December 12, 2001, pp. 1-12.	
	8	Howell, Richard H., "The Future: Intense Beams", Chapter 10 in Positron Beams and Their Applications, Paul Coleman Ed., World Scientific Publishing Co., Singapore, 2000, pp. 307-322.	
	9	Cassidy, D.B. and J.A. Golovchenko, "The Bose-Einstein Condensation of Positroniuim in Submicron Cavities", Chapter 6 in New Directions in Antimatter Chemistry and Physics, C.M. Surko and F.A. Gianturco, Eds., Kluwer Acaemic Publishers, Netherlands, 2001, pp. 83-99.	
	10	Mills, Allen Paine, Jr., "Positronium Molecule Formation, Bose-Einstein Condensation and Stimulated Annihilation", Nuclear instruments and Methods in Physics Research B, No. 192, Elsevier Science B.V., 2002, pp. 107-116.	
	11	Platzman, P.M. and A. P. Mills, Jr., "Possibilites for Bose Condenstion of Positronium", Physical Review B, Vol. 49, No. 1, 1 January 1994, pp. 454-458.	
	12	Saito, Haruo andToshio Hyodo, "Cooling and Quencing of Positronium in Porous Material", Chapter 7 in New Directions in Antimatter Chemistry and Physics, C.M. Surko and F.A. Ginaturco, Eds., Kluwer Academic Publishers, Netherlands, 2001, pp. 101-114.	
	13	Ackerman, J., et al., "Long-Lived States of Positronium in Crossed Electric and Magnetic Fields", Physical Review Letters, The American Physical Society, Vol. 78, No. 2, 13 January 1997, pp. 1999-202.	
	14	Schmelcher, P., et al., "Stabilization of Matter-Antimatter Atoms in Crossed Electric and Magnetic Fields", Nuclear instruments and Methods in Physics Research B, No. 143, Elsevier Science B.V., 1998, pp. 202-208.	
	15	Schertzer, "Positronium in Crossed Electric and Magnetic Fields: The Existence of a Long-Lived Ground State", Physical Review A, The American Physical Society, Vol. 58, No. 2, August 1998, pp. 1129-1138.	
NW	16	Karlson, Antonella and Marvin H. Mittleman, "Stabilization of Positronium by Laser Fields", Journal of Physics B, Vol. 29, 1996, IOP Publishing, U.K., pp. 4609-4623.	

Examiner Signature	Nikita Wells	Date Considered	July 21, 2004

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231 DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

PTO/SB/08B (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 3 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Barker et al.
Group Art Unit	2881
Examiner Name	Nikita Wells
Attorney Docket Number	02W120

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
NW	19	Wallen, P. and W.A. Mahoney, "The Postronium Radiative Combination Spectrum: Calculation in the Limit of Thermal Positrons and Low Densities", The Astrophysical Journal, Vol. 465, July 1, 1996, The American Astronomical Society, USA, pp. 473-486.	
	20	Baldwin, Geroge C. and Johndale C. Solem, "Recoiless Gamma-Ray Lasers", Review of Modern Physics, Vol. 69, No. 4, October 1997, The American Physcial Society, pp. 1085-1117.	
	25	Liang, Edison P. and Charles D. Dermer, "Laser Cooling of Positronium", Optics Communication, Vol. 65, No. 6, 13 March 1988, Elsevier Science Publishers B.V., pp. 419-424.	
	26	John, Sajeev and Jian Wang, "Quantum Optics of Localized Light in a Photonic Band Gap", Physical Review B, Vol. 43, No. 16., 1 June 1991, The American Physcial Society, pp.12 772-12 789.	
	27	John, Sajeev and Jian Wang, "Quantum Electrodynamics Near a Photonic Band Gap, Photon Bound States and Dressed Atoms", Physical Review Letters, Vol. 64, No. 5, 14 May 1990, The American Physical Society, pp. 2418-2421.	
	28	John, Sajeev and Tran Quang, "Photon-Hopping Conduction and Collectively Induced Transparency in a Photonic Band Gap", Physical Review A, Vol. 52, No. 5, November 1995, The American Physical Society, pp. 4083-4088.	
	29	John, Sajeev, "Quantum Optical Spin-Glass State of Impurity TwO-Level Atoms in a Photonic Band Gap", Physical Review Letters, Vol 76, No. 8, 19 February 1996, The American Physical Society, pp. 1320-1323.	
	30	Quang, Tran, et al., "Coherent Control of Spontaneous Emission Near a Photonic Band Edge: A Single-Atom Optical Memory Device", Physical Review Letters, Vol 79, No. 26, 29 December 1997, The American Chemical Society, pp. 5238-5241.	
	31	John, Sajeev and Kurt Busch, "Photonic Bandgap Formation and Tunability in Certain Self-Organizing Systems", Journal of Lightwave Technology, Vol. 17, No. 11, November 1999, pp. 1931-1943.	
	32	Lin, Shawn-Yu and J.G. Fleming, "A Three-Dimensional Optical Photonic Crystal", Journal of Lightwave Technology, Vol. 17, No. 11, November, 1999, pp. 1944-1947.	
NW	33	Roundy, David and John Joannopoulos, "Photonic Crystal Structure with Square Symmetry with each Layer and a Three-Deimensional Band Gap", Applied Physics Letters, American Insitutue of Physics, Volume 82, No. 22, 2 June 2003, pp. 3835-3837.	

Examiner Signature	Nikita Wells	Date Considered	July 21, 2004

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08B (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute for form 1449B/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 4 of 4

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Barker et al.
Group Art Unit	2881
Examiner Name	Nikita Wells
Attorney Docket Number	02W102

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
NW	34	Sievenpiper, D.R., et al., "3D Wire Mesh Photonic Crystals", Physical Review Letters, Vol. 76, No. 14, 1 April 1996, pp. 2480-2483.	
NW	35	Winn, Joshua N., et al., "Two-Dimensional Photonic Band-Gap Materials", Journal of Modern Optics, Vol. 41, No. 2, 1994, pp. 257-273.	
NW	36	Yablonovitch, E. and T.J. Gmitter, "Photonic Band Structure: The Face-Centered-Cubic Case Employing Nonspherical Atoms", Physical Review Letters, Vol. 67, No. 17, 21 October 1991, pp. 2295-2298.	
NW	37	Zooreb, M.E., et al., "Complete Photonic Bandgaps in 12-Fold Symmetric Quasicrystals", Letters to Nature, Nature, Vol. 404, 13 April 2000, pp. 740-743.	

Examiner Signature	Nikita Wells	Date Considered	July 21, 2004

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231